DOCUMENT RESUME

ED 240 395 CE 800 087

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TITLE	Communications Technologies in Adult, Career, and Vocational Education. Overview: ERIC Fact Sheet No. 22.
INSTITUTION	ERIC Clearinghouse on Adult, Career, and Vocational Education, Columbus, Ohio.
SPONS AGENCY	National Inst. of Education (ED), Washington, DC.
PUB DATE	[83]
NOTE	4p.; This fact sheet is based upon four papers included in "Communications Technologies: Their Effect on Adult, Career, and Vocational Education" edited by N.E. Singer (ED 220 726).
PUB TYPE	Information Analyses - ERIC Information Analysis Products (071)
EDRS PRICE	MF01/PC01 Plus Postage.
DESCRIPTORS	*Communications; Delivery Systems; *Educational Change; Educational Demand; *Educational Technology; Literature Reviews; Teacher Role; Teaching Methods; *Technological Advancement; *Telecommunications
IDENTIFIERS	ERIC; Fact Sheets; PF Project

ABSTRACT

This fact sheet provides an overview of the potential effects of new communications technologies on education. The topics which are addressed include: (1) examples of communications technologies including television, teletext and viewdata, Instructional Television Fixed Service and Multipoint Distribution Services, videodiscs, direct broadcast satellites, and personal computers; (2) influences these technologies will have on the workplace and on the demand for education; (3) ways that they will affect teaching methods and instructional delivery systems; and (4) potential effects they will have on the role of the educator. Four papers upon which this fact sheet is based (see note) are cited along with three additional resources, two of which are available from the Educational Resources Information Center (ERIC) system. (DC)

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Communications Technologies in Adult, Career, and Vocational Education.

Overview: ERIC Fact Sheet No. 22.

by

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ERIC OVERVIEW

FACT SHEET No. 22

Clearinghouse on Adult, Career, and Vocational Education

COMMUNICATIONS TECHNOLOGIES IN ADULT, CAREER, AND VOCATIONAL EDUCATION

What Are the Communications Technologies?

Communcations technologies include a range of devices that process and transmit information. The home television and telephone are the most obvious. Others such as microcomputers are gaining acceptance as the cost of production drops, thus allowing their purchase by increasing numbers of individuals and institutions. Examples of communications technologies include the following:

- The television set with its VHF, UHF, and cable capabilities.
- Teletext and viewdata systems for transmitting text over the television. Now used for news, stock reports, weather forecasts, and closed-captions for the deaf, these adaptions can be used to transmit any written text via television.
- Instructional Television Fixed Service and Multipoint Distribution Services are similar services that use television channels for specific purposes such as educational television, special entertainment, or home shopping. These operate on microwave frequencies above the UHF band and provide twenty-eight channels.
- Videodiscs, which provide increased information storage capacity. Currently, videodiscs can store about 50,000 video frames, and this capacity will increase in the near future.
- Direct broadcast satellites that are now available for as little as $2,500 and are estimated to be used in as many as 100,000 homes. These satellites can pick up educational programming directly.
- Personal computers, which are available today for less than $1,000. These are twenty times faster and cost two hundred times less than the computers that were available in 1958. By the early 1990s, computers will be approximately thirty times more powerful than at present.

These communications technologies are being developed and improved at a rapid pace. Their costs are being reduced as their capacity is being increased. This growth in technology is resulting in the "wiring" of the home and other institutional settings, which means that the delivery of education and information can now be accomplished in a variety of settings.

How Will Communications Technologies Influence the Demand for Education?

New communications technologies are being applied in the work place as they are developed. This technological change creates new occupations, eliminates existing occupations, and modifies the requirements for existing occupations.

- From 1949 to 1965, about 3,000 occupations disappeared from the United States labor market while more than 6,000 new occupations were developed (Abbott 1978).
- Many workers will need to retrain three or four times during their careers because of rapid technological advance.
- Microcircuitry, which can replace hundreds of moving parts, is redefining and reducing the number of jobs in many industries. Robots are altering the environment of the assembly line. Printing, textiles, metal and plastic fabrication, instrument engineering, electronics, shipbuilding, and aircraft fabrication are some of the industries that are being affected by this technology (Norman 1980).
- The work place will become a set of human/machine partnerships. The new "basics" required of workers will center on largely nontechnical skills that in many ways resemble those taught in a liberal arts, general education curriculum.
- Theobald (1979) suggests that the following skills will be required: skills to live happily and creatively with others, life-planning skills, decision-making skills, creative change skills, and skills in analyzing the need for stability versus change.

Technological changes will create a need for lifelong education. Educational needs will include (1) specific skill training, (2) skill upgrading as occupations require higher levels of skills, and (3) general skills such as problem-solving, descision-making, and interpersonal relations skills.

How Will Communications Technology Change Education?

The use of communications technologies will influence instruction in several ways:

- They can improve instruction in conventional areas such as drill and practice activities.
- They can provide flexible instruction to meet individual student needs based on current achievement levels and preferred learning styles.
- They can deliver instruction in new knowledge and skills areas through such techniques as simulation. These areas include complex procedural skills such as laboratory procedures, medical skills, advanced writing, equipment troubleshooting, and instrument usage.

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- They can increase the number of students served while maintaining cost-effectiveness. Traditionally, education has been labor intensive. The use of communications technology to deliver instruction can increase the productivity of education.
- They can provide cost-effective access to information and knowledge that will help reduce costs associated with more traditional methods of storing, updating, and disseminating information.
- They can increase the variety of settings in which education is delivered. Increasingly, education will move out of the school into the home and other community settings.

The use of communications technologies can remove many of the constraints such as time requirements and geographic distance, that have made it difficult for individuals to participate in educational programs. Through the use of mass media and computer networking, learners will be able to participate in learning activities at home, at the work place, or in other convenient settings.

How Will Communications Technologies Change the Role of the Educator?

While specific technologies may not receive wide acceptance, overall developments will continue. This means that the questions facing educators are: "What strategies are needed to ensure the quality of instruction delivered through these technologies, and what changes in the educator's role are needed in light of these technologies?" The following are possible answers to these questions:

- Communications technology will require educators to function at higher levels. Technology will perform basic education functions such as providing information and administering drill and practice exercises. Educators will need to identify and perform those functions that cannot be delivered by technology.
- Educators will become program developers and learning managers rather than direct instructional deliverers.
- Educators will need to review curriculum and to identify knowledge and skill areas that can become part of the curriculum due to the new instructional capabilities of such communications technologies as simulation.
- Educators will need to coordinate instructional design with private sector learning systems developers, employers, and potential consumers of educational services.
- Educators will need to work cooperatively with parents since communications technologies are increasing the learning capacity of the home.
- Educators will need to seek continuing education to increase their understanding of the educational uses and applications of communications technologies.

This fact sheet is based on the following four papers found in *Communications Technologies: Their Effect on Adult, Career, and Vocational Education* edited by N.E. Singer, Information Series No. 244, Columbus: The ERIC Clearinghouse on Adult, Career, and Vocational Education, The National Center for Research in Vocational Education, The Ohio State University, 1982. (ERIC Document Reproduction Service No. ED 220 726).

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This fact sheet was developed by Juliet Miller, ERIC Clearinghouse on Adult, Career, and Vocational Education.

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